Remarks/Arguments

Applicants thank the Examiner for a thorough and timely examination and for acknowledging the Applicants' claim for foreign priority under 35 U.S.C. § 119, noting that all priority documents have been received, and acknowledging acceptance of the drawings filed June 26, 2008.

Applicants thank the Examiner for pointing out that the submitted oath or declaration is defective. Applicants will submit a corrected declaration as soon as it is made available.

I. Status of Claims

Claims 1-16 and 33-34 are currently pending in the application. This amendment amends claim 1, cancels claims 20-32, and addresses each point of objection and rejection raised by the Examiner.

The amended claim language finds support in the specification as originally filed. No new matter has been added. Favorable reconsideration is respectfully requested.

II. Rejections of the Claims under 35 U.S.C. §112, 2nd Paragraph

Claims 1-16, 33 and 34 are rejected under 35 U.S.C. 112 second paragraph as being incomplete for omitting essential elements.

With regard to the 35 U.S.C. 112, second paragraph rejection of claim 1, questioning the relationship between "calculating an address compensation factor" and "a column formed with the remainder R", Applicants have amended claim 1 to recite "in accordance with" as opposed to "in consideration of." The Examiner states

that "in consideration of a column" does not translate to a positive limitation. Applicants' amended language, reciting "in accordance with", is acceptable language that necessarily results in a positive limitation. Further, Applicants point out that an exact relationship between "calculating an address compensation factor" and "a column formed with the real value of the remainder R" need not be recited in the claims. MPEP § 2173.04 states that "breadth of a claim is not to be equated with indefiniteness. If the scope of the subject matter enhanced by the claims is clear, and if Applicants have not otherwise indicated they intend the invention to be of a scope different from that defined in the claims, then the claims comply with 35 U.S.C. 112, second paragraph." Applicants contend that the relationship of how the compensation factor is calculated in accordance with a column formed with the real value of the remainder R is clearly supported in the specification and defined by the claim language. It appears that the Examiner does not understand the specification as it applies to the claim language, and thus is unable to determine the scope of the claim language. Additional clarification is provided below to facilitate the Examiner's understanding of the scope of the claim language.

With respect to claims 2 and 3, the Examiner is still unclear how the steps of each of these claims relate to the step recited in claim 1. The Examiner contends "that it is not clear how the interim address generation step of claims 2 and 3 relates to generating an interim address by bit reversal order (BRO) operation. That is, what does excluding the last column and including the last column have to do with generating an interim address by bit reversal order (BRO) operation[?]" Clearly, the Examiner misunderstands the scope of the claim language. Claim 2 recites "wherein

the interim address generation step comprises the step of [...]." Applicants submit that this step does not need to further qualify the BRO operation itself, but the step of generating an interim address. The step of including or excluding the last column is not part of the BRO operation but a further step in generating the interim address. The claim language does not require otherwise, thus the scope of the claim language is clear, especially in view of the specification.

As per claim 3, the Examiner contends "the relationship between calculating an address compensation factor for compensating the interim address in consideration of the remainder and address compensation factor calculation step of claim 3 is not clear." Applicants have amended claim 1 to recite "in accordance with", thus the relationship between the steps of claim 3 and claim 1 should be clear as further discussed above. Additional explanation of the claimed relationship in view of the specification is offered below and should necessarily render the claim language as definite under 35 U.S.C. 112, second paragraph.

An exemplary embodiment of the present application determines an address for properly decoding interleaved code symbols in an encoder packet. The method of the exemplary embodiment provides flexibility in mobile communication systems by enabling a packet of various sizes to be interleaved at a transmitter and deinterleaved at the receiver. Until the present application, only packets with a number of bits that formed a uniform (2^m * J) matrix were able to undergo such interleaving and deinterleaving. An exemplary embodiment of the present application enables correct deinterleaving of a packet by understanding the affect of an incomplete column of code symbols (the remainder R) on the interleaving step and compensating the read

address in accordance with the remaining code symbols in the incomplete column. The step of generating a correct read address comprises two main steps.

The first step is to generate an interim address. The interim address is an address for an interleaved code symbol assuming the interleaving step was performed on a completely uniform (2^m * J) matrix. The step of generating the interim address further determines the number of columns to be accounted for in the assumed completely uniform matrix. Claim 2 details whether to include the last column or not based on the number of remaining code symbols in the last column of the actual incomplete matrix. The decision on whether to include the last column is clearly recited in the claim language. The interim address is completely generated by performing a BRO operation on an index of a code symbol, multiplying the resultant value by the number of columns based on whether the last column is excluded or not and adjusting this value by adding an additional factor (as shown in equation 3 of the present specification and recited in claims 33 and 34). The Examiner seems to be confusing the step for generating the interim address as discussed above. Claim 1 reads "generating an interim address by bit reversal order (BRO) operation on an index of a code symbol." It appears that the Examiner considers this step to be a closed step, such that the step in claim 2 must necessarily affect the (BRO) operation. However, claim 2 reads that "the generation step comprises the step of generating the interim address by ..." such that it clearly identifies a separate step distinct from the BRO operation of claim 1. The Examiner is wrong in requiring that the step of "excluding the last column" or "including the last column" must correspond to the bit reversal operation.

The second step for generating a read address consists of calculating an address compensation factor for compensating the interim address in accordance with a column formed with the remainder R. As discussed above, when interleaving is performed on an incomplete matrix, it is necessary to determine the affects of the incomplete column on the interleaved address of the other code symbols. As such it is necessary to compensate the interim address in accordance with the column formed by the remainder R, the effect of which was disregarded in the step of generating the interim address. This step is further clarified in claim 3. Claim 3 coincides with the determination made in claim 2 of whether or not to include the last column. If the last column was excluded from the step of generating the interim address ($R < \frac{1}{2} * 2^m$), then the address compensation factor accounts for the affect of the remaining R code symbols by incrementing by 1 each time a code symbol appears in the last column. Each time a code symbol appears in the last column, the affect of that code symbol on the read address, had the last column been included (as described in claim 2), is accounted for. The remaining case in claim 3 concerns adjusting the compensation factor in the instance when the last incomplete column is included in the interim address generation step.

Applicants submit that the amendment to claim 1 and the arguments and clarification provided above necessarily render claims 1-3 specific and definite under 35 U.S.C. 112, second paragraph.

Accordingly, Applicants respectfully request withdrawal of the rejections to claims 1-16 and 33-34 under 35 U.S.C. §112 second paragraph.

III. Rejections of the Claims under 35 U.S.C. §101

Claims 1-16, 33 and 34 are rejected under 35 U.S.C. § 101 because the claims are allegedly directed to non-statutory subject matter. The Examiner states that the limitations of claim 1 are directed to an abstract mathematical algorithm of generating an abstract binary address number value intended for use in an abstract method for reading data intended for use in implementing an abstract algorithm for rearranging data. The Examiner further states that the algorithm presented in claims 1-16 and 33-34 is explicitly taught as and directed to a method for rearranging data by retrieving/reading data from a matrix/array/memory in a particular order. The Examiner explains that simply put, "claims that describe features in the Applicant's specification at the abstract level without any regard to function or utility are nonstatutory."

Applicants respectfully disagree with the Examiner's rejection and believe that it is improper. First, the Examiner does not distinctly point out what the Examiner believes the present invention is directed towards and specifically why it doesn't meet the requirements of 35 U.S.C. 101, as required by MPEP. It seems that in one argument, the Examiner considers claim 1 to be simply a mathematical algorithm for rearranging data. Another argument seems to reject claim 1 because it is allegedly directed to an abstract idea, law of nature or natural phenomenon. A third argument states that claim 1 allegedly lacks function or utility and is thus nonstatutory. Applicants submit that the Examiner fails to establish a proper *prima facie* case for rejection under 35 U.S.C. 101. However, assuming *arguendo* that the Examiner made

a proper *prima facie* case for rejection, Applicants believe the claims are nevertheless directed to statutory subject matter.

With respect to the Examiner's assertion that the limitations of claim 1 are directed to an abstract mathematical algorithm, Applicants respectfully disagree. MPEP 2106.02 states "In practical terms, claims define nonstatutory processes if they consist solely of mathematical operations without some claimed practical application or simply manipulate abstract ideas without some claimed practical application." Clearly claim 1 is not directed to solely mathematical operations or simply manipulating abstract ideas without some claimed practical application. Claim 1 clearly recites a method for reading code symbols to decode an encoder packet in a receiver wherein the method comprises steps for generating a read address for the code symbol by adding an interim address and an address compensation factor, and reading the code symbol. At the least, the step of reading the code symbol is clearly not a mathematical operation. Thus, claim 1 cannot conceivably consist of solely mathematical operations. Additionally, the step of generating an address compensation factor cannot be considered solely a mathematical operation as it comprises a determination of whether to increase an address compensation factor or decrease an address compensation factor based on a decision made in generating the interim address, as understood in view of the specification and recited in claim 3. Clearly, these steps are not simply mathematical operations. At the least, for the sake of argument, the method of claim 1 is a particular application of an abstract idea and not the abstract idea itself.

Assuming *arguendo*, that the claim is directed to an abstract idea, the test for determining whether it is statutory requires analysis of whether the claim as a whole provides a practical application by producing a useful, concrete and tangible result.

a) "USEFUL RESULT"

For an invention to be "useful" it must satisfy the utility requirement of section **101**, that is the utility of an invention has to be (i) specific, (ii) substantial and (iii) credible. Claim 1 clearly recites a specific practical application that is both substantial and credible. (i.e. reading code symbols to decode an encoder packet wherein the decoder packet contains a number of code symbols such that the number does not make up a completely uniform matrix).

b) "TANGIBLE RESULT"

As stated in MPEP 2106, the tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. The MPEP states that the opposite meaning of "tangible" is "abstract." Applicants submit that independent claim 1 recites more than just an abstract idea, law of nature or natural phenomenon such as reading a code symbol for decoding an encoder packet at an address generated in part by calculating an address compensation factor. Further, Applicants submit that the calculation of an address compensation factor for generating a read address and reading the code symbol at the address are real world results.

c) "CONCRETE RESULT"

As stated in MPEP 2106, another consideration is whether the claimed invention produces a "concrete" result (e.g., a result that can be assured, or can be

substantially repeatable, or can substantially produce the same result again). In other words, as stated in MPEP 2106, the opposite of "concrete" is unrepeatable or unpredictable. Applicants respectfully submit that the reading of a code symbol from a read address generated by adding the interim address and the address compensation factor for the code symbol is a repeatable and predictable result.

Thus, Applicants respectfully assert that independent claim 1 recites statutory subject matter under 35 U.S.C. 101 because in the least, the claimed invention produces a useful, concrete and tangible result. Therefore, Applicants respectfully request the Examiner reconsider and withdraw the rejections of claims 1-16 and 33-34 under 35 U.S.C. 101.

IV. Rejections of the Claims under 35 U.S.C. §102(b)

Claim 1 has been rejected under 35 U.S.C. §102(b) as being anticipated by Kim M et al. (WO 0035102 A 1). Applicants respectfully request reconsideration and withdrawal of this rejection.

"[A]n invention is anticipated if the same device, including all the claim limitations, is shown in a single prior art reference. Every element of the claimed invention must be literally present, arranged as in the claim. The identical invention must be shown in as complete detail as is contained in the patent claim." MPEP § 2131.

Applicants respectfully submit that the Examiner does not fully comprehend the scope of the present application and its relation to the cited art. Applicants believe the arguments presented above necessarily distinguish the present application over the

cited art of Kim. Specifically, Kim clearly does not disclose or suggest at least the step of calculating an address compensation factor for compensating the interim address in accordance with a column formed with the real value of a remainder R. The Examiner states that Kim discloses generating the read address by adding to the interim address the address compensation factor, 2^m(K mod J). As stated above, Claim 1 of the present application recites a step of calculating an address compensation factor *in accordance with a column formed with the real value of the remainder R.* Alternatively, Kim is directed to an interleaving method wherein there are no remaining R bits, thus interleaving is performed with a complete uniform matrix. Since there are no remaining R bits in a last column, Kim cannot disclose a compensation factor in accordance with the real value of the remainder R. The factor, 2^m(K mod J), cited in Kim is not related in any way to any remainder R, as defined in the preamble of claim 1 of the present application. The remainder R indicates a number of remaining bits that do not form a complete matrix. In systems wherein the number of bit symbols do not enable a uniform matrix in interleaving, it is necessary to compensate for the remaining bits. The present application recites a method of compensating for these remaining bits, thus resulting in the step of address compensation that is neither apparent nor obvious in view of Kim.

Applicants respectfully believe the Examiner misunderstands both the present application and the cited reference of Kim. Kim is directed to a method for reading code symbols. However, the read address cited by Kim for reading code symbols does not include deinterleaving or any compensation for a remaining number of bits formed in the last column that does not complete the last column. Kim fails to disclose

generating any read address in situations wherein the number of code symbols is as described in the preamble of claim 1. Thus, at the least, Kim fails to discuss calculating an address compensation factor for compensating the interim address in accordance with a column formed with the real value of the remainder R, and generating a read address by adding the interim address and the address compensation factor. Applicants respectfully disagree that Kim anticipates the features of claim 1 in as complete detail as recited in claim 1. Accordingly, Applicants respectfully request the Examiner reconsider and withdraw the rejection of claim 1 under 35 U.S.C. 102(b).

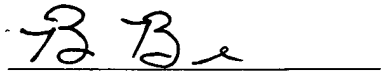
V. Double Patenting Rejection

In view of the arguments present above, Kim fails to disclose at least the steps of calculating an address compensation factor for compensating the interim address in accordance with a column formed with the real value of the remainder R, and generating a read address by adding the interim address and the address compensation factor. Further, as discussed above, the recited steps claim 1 cannot be considered obvious in view of Kim. Because Kim fails to describe or suggest at least these recited features, there is no basis for a double patenting rejection. Applicants respectfully request the Examiner reconsider and withdraw the nonstatutory double patenting rejection of claim 1.

CONCLUSION

In view of the above, it is believed that the above-identified application is in condition for allowance, and notice to that effect is respectfully requested. Should the Examiner have any questions, the Examiner is encouraged to contact the undersigned at the telephone number indicated below.

Respectfully submitted,



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